Anglesite from Portugal.

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THESE crystals of anglesite were given to me by Dr. Gadow, the Strickland Curator to the University of Cambridge, who obtained them while on a zoological expedition to Portugal.

They were given to him by the agents at the San Domingos copper mines near the Guadiana river in the province of Algarve, South Portugal, as crystals strange and unknown to them.

The only Portuguese localities recorded at present for anglesite are far north of these mines.

The San Domingos mines are worked in a portion of the great metallic lode or bed which stretches from the S.W. of Portugal, across the southern portion of Spain, in the province of Huelva, in an E.S.E. direction, and appearing again in a similar manner and direction on the other side of the Mediterranean in Algeria. The age of the surrounding strata is a matter of dispute. Some geologists call them Silurian, others Devonian, but F. Römer is of opinion that they belong to a low horizon of the Culm measures.* The well-known Rio Tinto and Tharsis mines are worked in this lode.

These crystals of anglesite are of a reddish honey-yellow colour, semi-transparent, with vitreous to greasy lustre, conchoidal fracture, with no apparent cleavage. H. 3. They vary in size, the largest I have being 25 mm. by 20 mm., and 14 mm. deep. The form is that of a simple rhombic prism with basal plane. The *c* (001) plane has wavy striations parallel to the intersections of the planes *c* and *a*. The *m* plane shows polysynthetic growth. On holding a crystal up to the light and viewing it through the plane *c*, layers of different shades can be seen parallel to the *m* planes. The thickness of the layers seems to be governed by the depth and breadth of the "junction faces," which are described below. Some of the *m* planes exhibit indentations forming impression or false planes, sometimes called "junction planes;" also fine deep striations giving "vicinal junction faces." One of these false faces

* *Zeitschr. d. d. geol. Gesellsch.* 1876, p. 354.

is quite smooth, and makes an angle of 39° 53′ with m, 54° 10′ with m', and 60° 38′ with c (Fig. 2). This face is only perceived to be a false or junction plane through the impossibility of assigning to it simple indices, and also through the entire absence of the other planes on the best developed edges of the crystals required by the law of symmetry. The simplest indices that can be assigned to this face are (18 81 77).

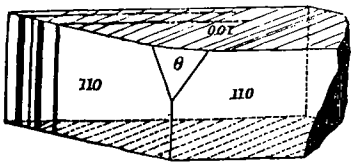

FIG. 2.

False planes formed by the impression of crystals of the same nature are well seen in the cases of some varieties of quartz and garnet, when groups of crystals of either minerals are broken asunder.

I have been unable to find any definite regularity existing either between the directions of the striations on the junction faces to the crystallographic edges of the crystal itself or to the penetrating crystal.

We ought not to be surprised that we can find no law for the above, if we take into consideration the numerous ways of aggregating observed on crystals which, as far as our knowledge goes at present, follow no law except in a few aggregations called twins. But it must be remembered that the junction faces due to the penetration of like crystals are rare, and that the general rule is that when an aggregation of crystals is broken, only a conchoidal or splintery fractured surface is obtained.

The junction faces obtained on crystals in rock masses due to the impression of different crystals, that is to say, different minerals, can be accounted for easily, as we are dealing with two distinct molecular growths, while in the above we are considering similar chemical compounds with similar molecules, endowed, as far as we know, with similar powers of affinity.

The crystals from the San Domingos mine were measured on my Fuess Goniometer, and the angle between the two best m planes gave 76° 9½′, which agrees well with the calculated values obtained by other observers, viz.

Miller	m m′	76° 22′
Kokscharow	,,	76° 16′
Krenner	,,	75° 34′

The specific gravity of the crystal weighing 317·42 grams was found to be 6·252. It was associated with a little galena, iron pyrites, and snow-white gypsum.

Scarcity of material has prevented a chemical analysis being made, which however is not needed for determination of the mineral.